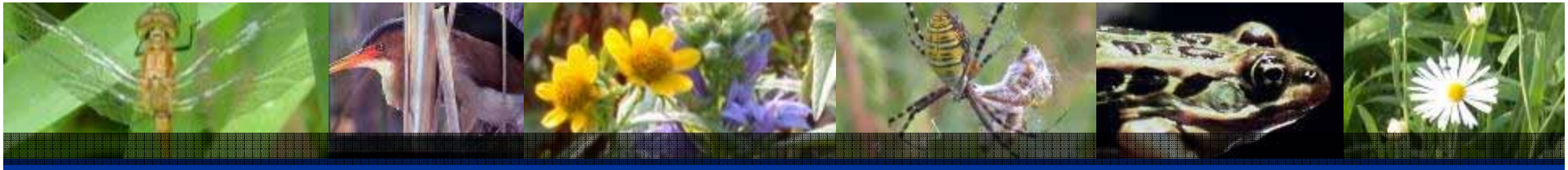
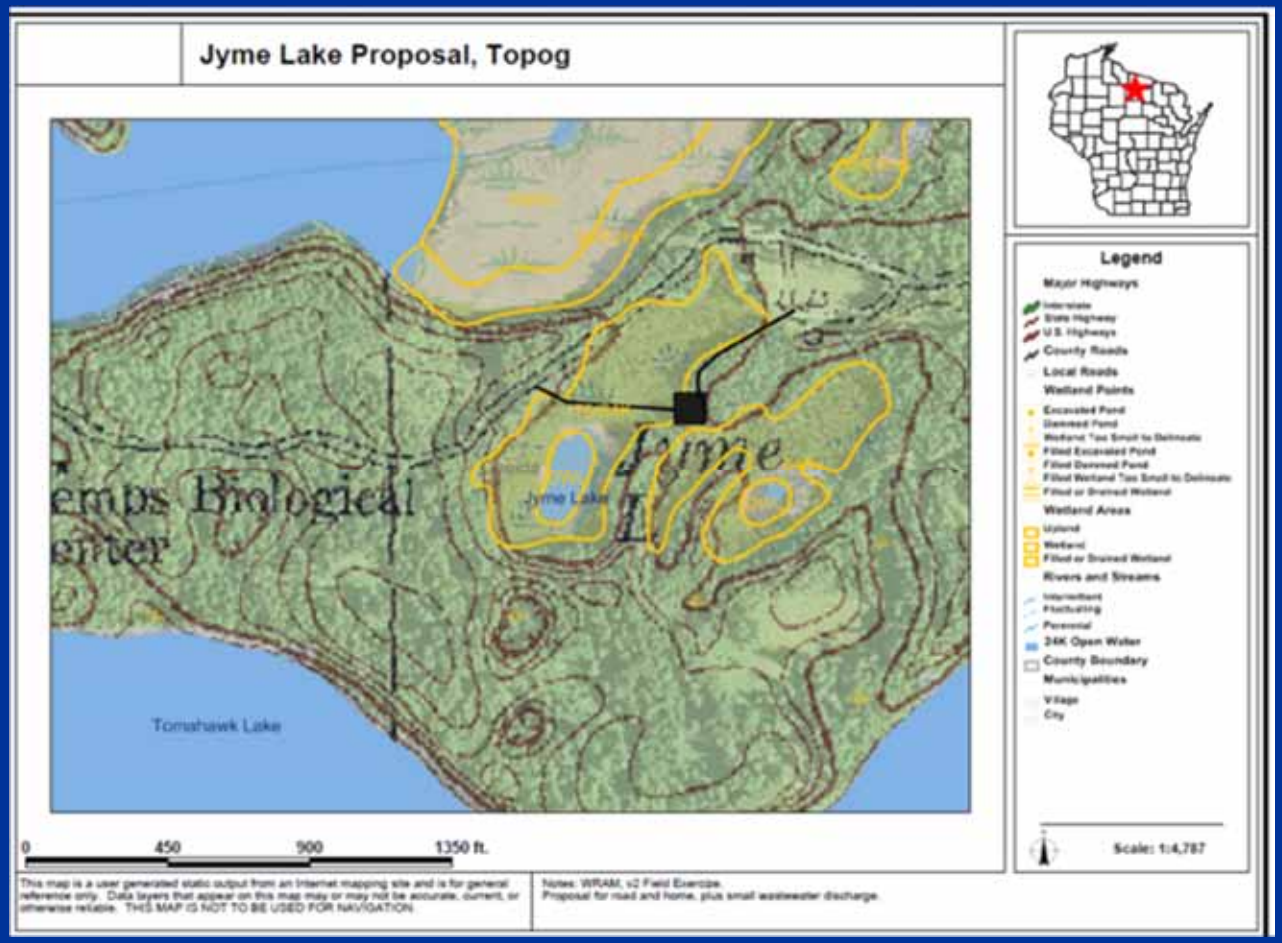
SEDGES ON THE EDGES: THE WETLAND – LAKE CONNECTION

Tom Bernthal
Pat Trochlell
Wisconsin Department of Natural Resources



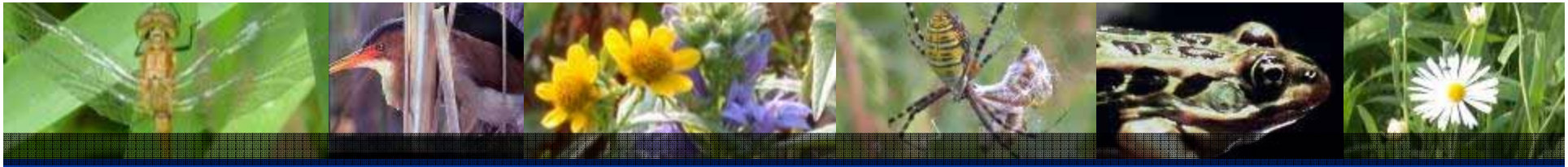
Mapping Tools and Resources



Wisconsin's Surface Waters and Wetlands

- Rivers & Streams
- Open Water
- Wetlands
- State Boundary

The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not intended to be used for navigation, nor is this map an authoritative source of information about legal land ownership or public access. Users of this map should confirm the ownership of land through other means in order to avoid trespassing. No warranty, expressed or implied, is made regarding accuracy, applicability for a particular use, completeness, or legality of the information depicted on this map.



WI Wetland Inventory

Landscape Level Wetland Functional Assessment
NWI+ (Hydrogemorphology)

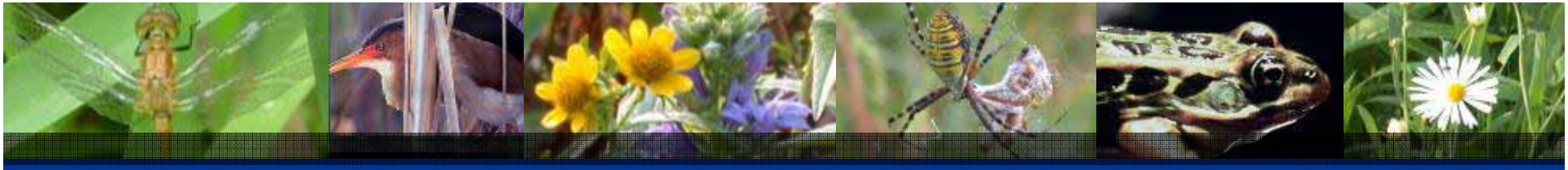
Landscape Position	Code	Definition
Lentic	LE	Wetlands associated with a lake basin or the relatively flat plain nearby.
Lotic River	LR	Wetland that is within the banks or periodically flooded by a river.
Lotic Stream	LS	Wetland that is within the banks or periodically flooded by a stream.
Terrene	TE	Wetland or complex surrounded by upland. Not within a floodplain or lake basin. It is not affected by lake, river, or stream flow processes.

Landform

Basin	BA	Wetlands that occur in a distinct depression.
Flat	FL	Wetlands that occur on relatively level ground surface.
Floodplain	FP	Wetlands that occur within an active flood zone of a river or stream.
Fringe	FR	Wetlands in the shallow water zone of a permanent water body.
Island	IS	A wetland or complex that is completely surrounded by water.
Slope	SL	Wetlands occurring on a gradient of five-percent or greater.

Landscape Level Wetland Functional Assessment NWI+

Waterflow Path	Code	Definition
Bidirectional	BI	Wetlands adjacent to lakes that are subject to the rise and fall of its water level. No influence from rivers or streams.
Inflow	IN	Wetlands receiving water from streams, rivers, or other surface source. These wetlands lack surface water outflow.
Outflow	OU	Water flows out from the wetland or complex naturally, but there is no source of water inflow.
Outflow Artificial	OA	**Water flows out from this wetland or complex via channelized drainage ditches or underground tiles.**
Outflow Intermittent	OI	Outflow occurs from this wetland or complex at intervals, not continuously, and lacks inflow source.
Throughflow	TH	Water flows naturally into and out of these wetlands. They are often adjacent to rivers and streams.
Throughflow Artificial	TA	Water flows into and out of these wetlands and complexes via channelized drainage ditches.
Throughflow Intermittent	TI	Water flows into and out of at intervals, not continuously.



Wetland Landscape Positions

- Landscape Position
  - Terrene
  - Lentic
  - Lotic River
  - Lotic Stream

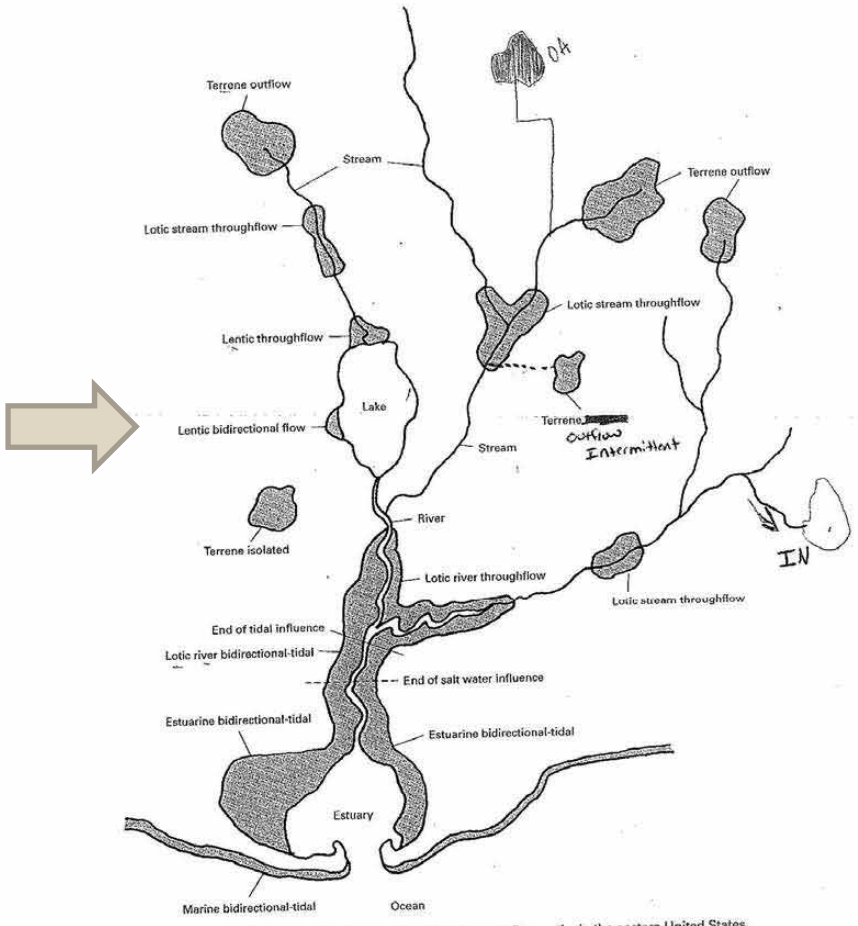
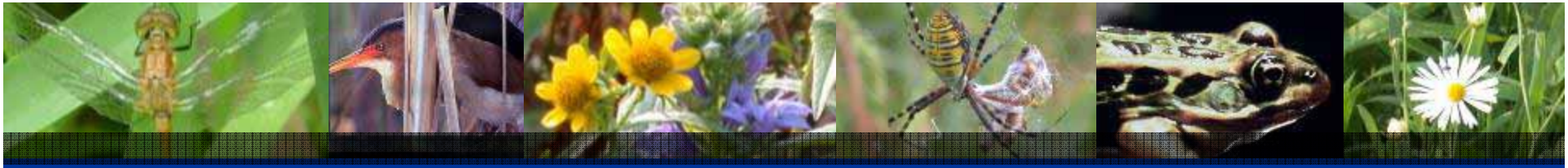


Figure 14.4. Typical wetland landscape positions and water flow paths in the eastern United States.

Nutrient Transformation

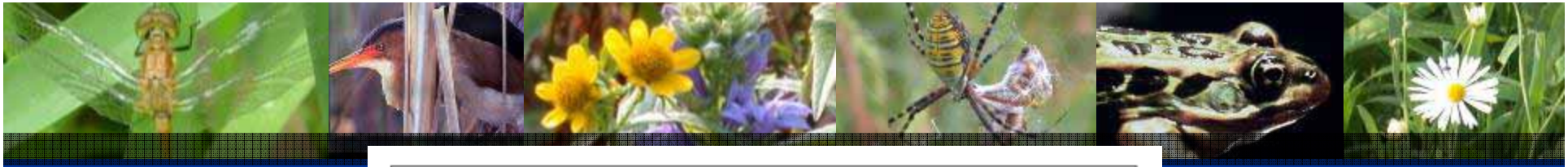
- High Level of Function
  - Vegetated Wetlands (emergent, shrub-scrub, forested, mixes) that are regularly flooded
- Moderate Level of Function
  - Vegetated Wetlands (emergent, shrub-scrub, forested, mixes) that are Seasonally Saturated or Temporarily Flooded
  - Fringing vegetated wetlands adjacent to lakes



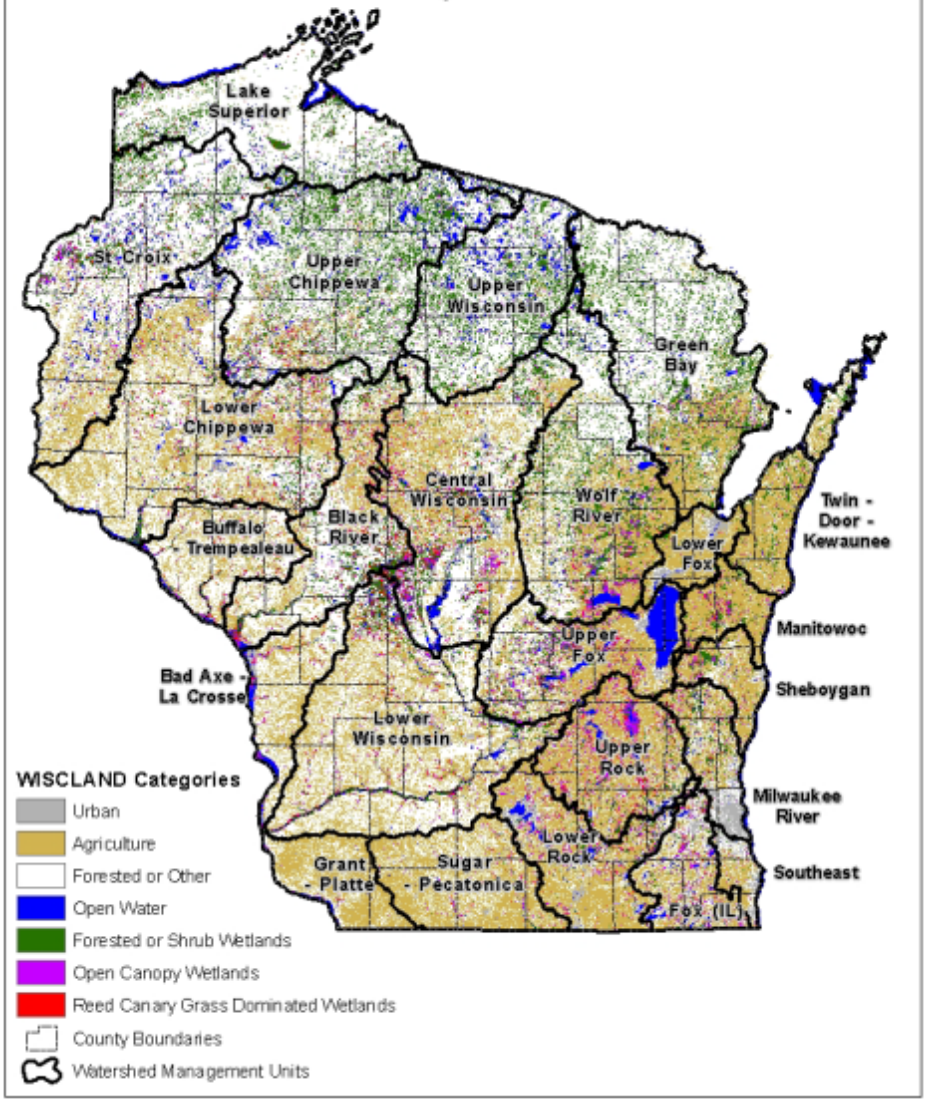
Reed Canary Grass Dominated Wetlands

Statewide ½ Acre Minimum Map Unit
Based on Landsat Imagery

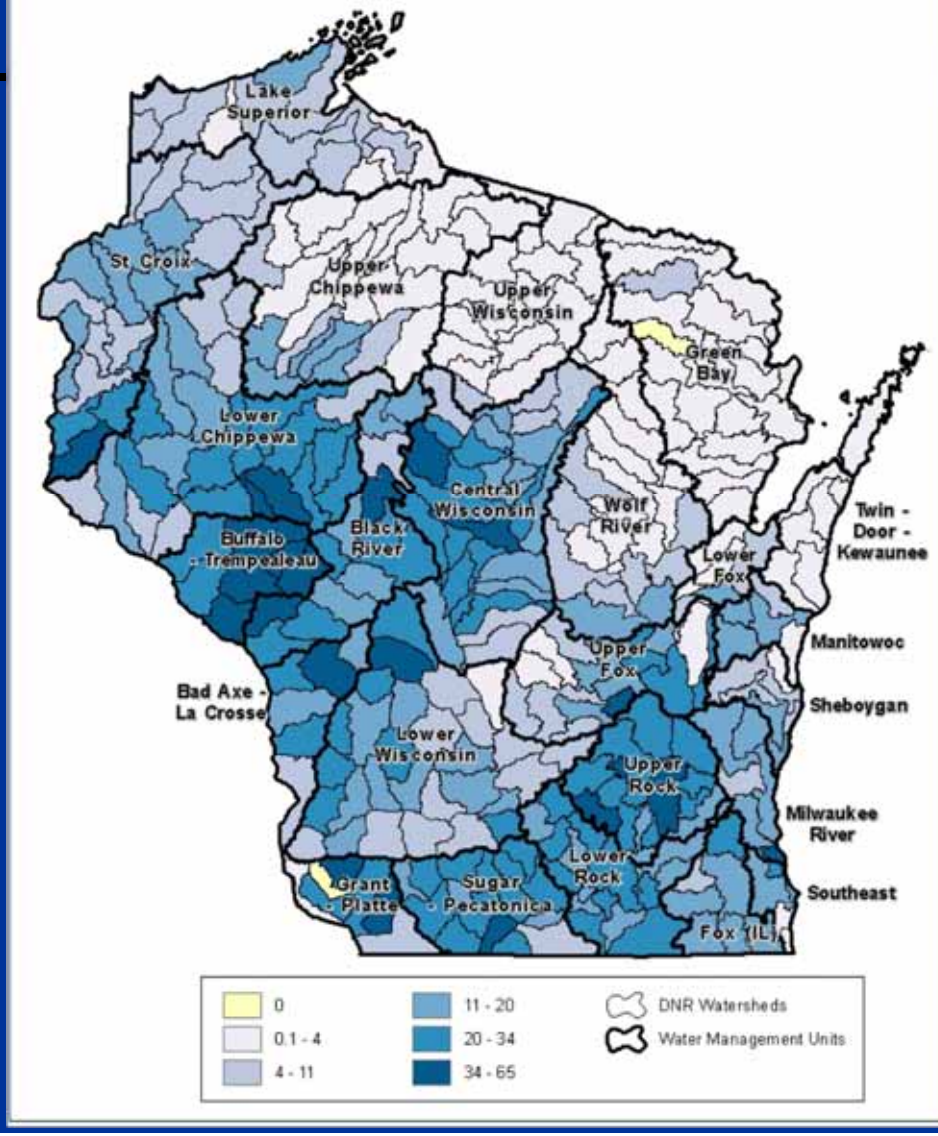
Caveats
61% to 83% Overall Accuracy
Wetlands were based on WISCLAND, 1991



Map 4: Wisconsin Wetlands, Agriculture, and Reed Canary Grass Domination

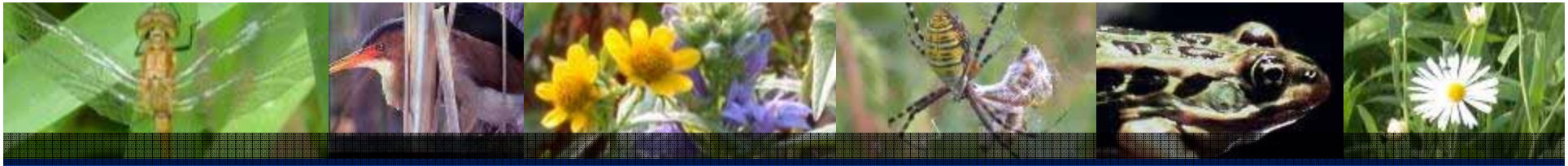


Map 6: Percent Area of Wetlands Dominated by Reed Canary Grass, per Watershed

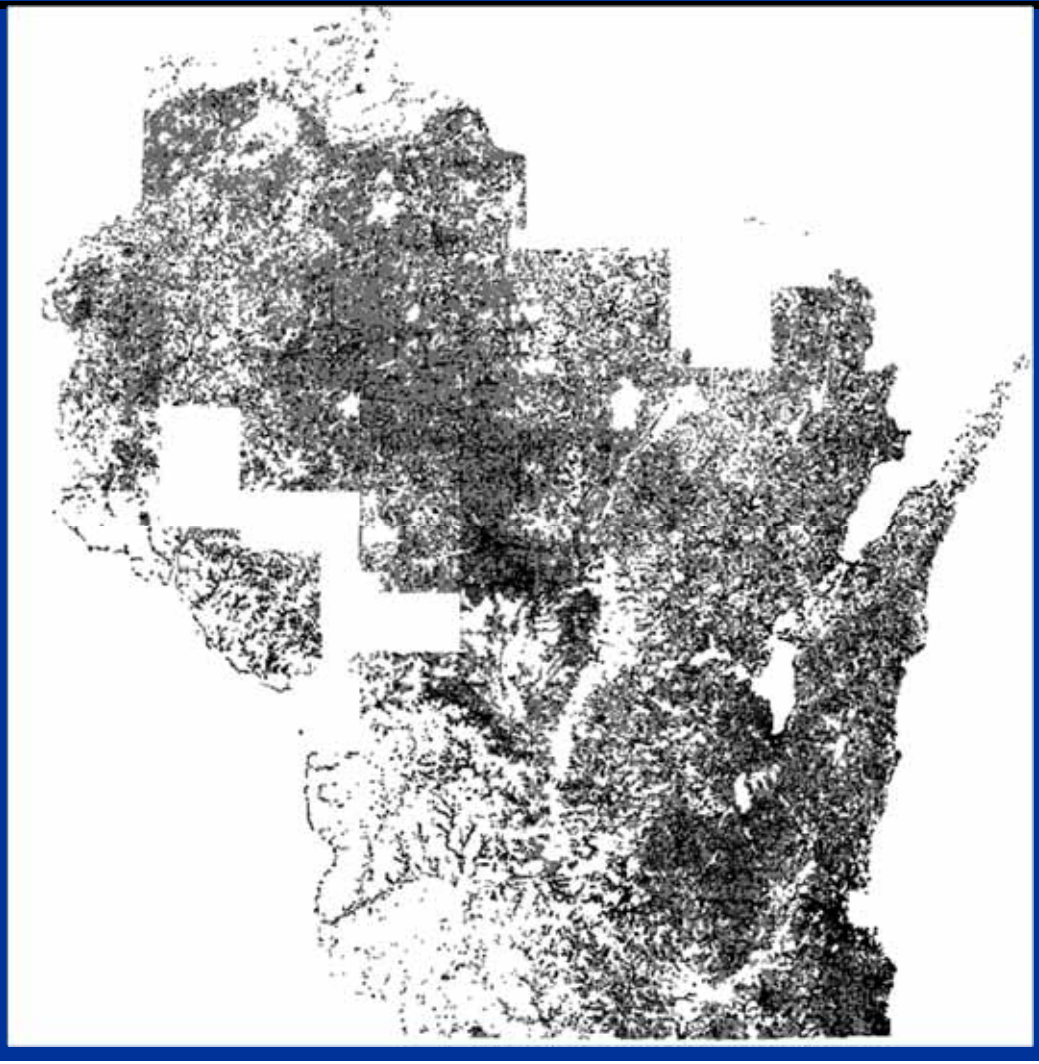


Floristic Quality Assessment

- Plant Community Integrity
- Coefficient of Conservatism – assigned to each native species based on site fidelity, tolerance of disturbance by experts on regional flora
- Mean C – average cofc of all plants on a site - $\bar{C}$
- Mean C weighted by abundance - $w\bar{C}$
- Floristic Quality Index – $\bar{C}\sqrt{N}$



Potentially Restorable Wetlands



Simple PRW Equation

Hydric soils (not in urban areas)

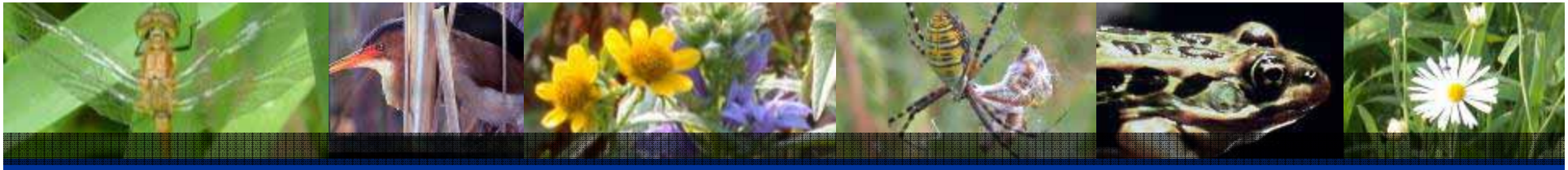
- current wetlands (on Wi Wetland Inventory)

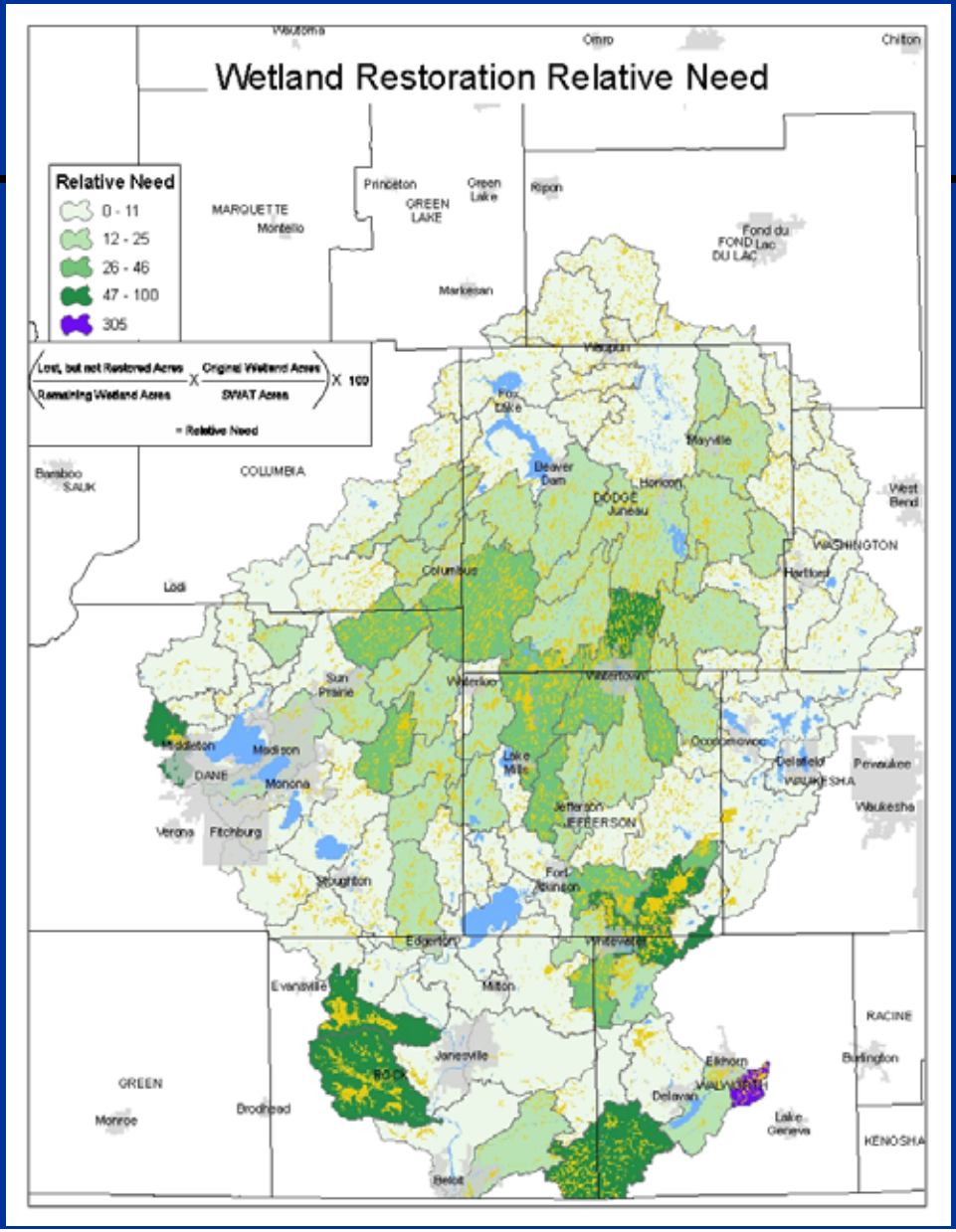
- recently restored (from restoration data)

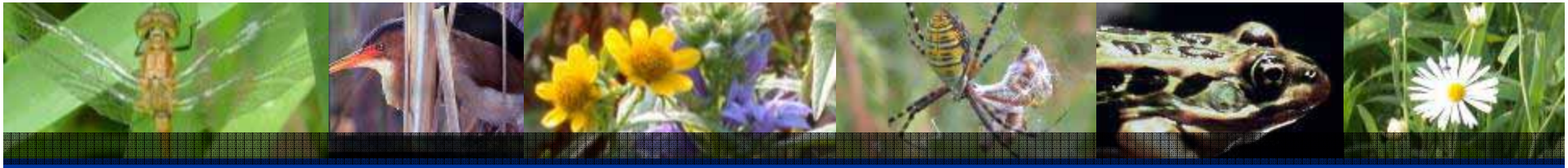
= Potentially Restorable Wetlands

- Caveats

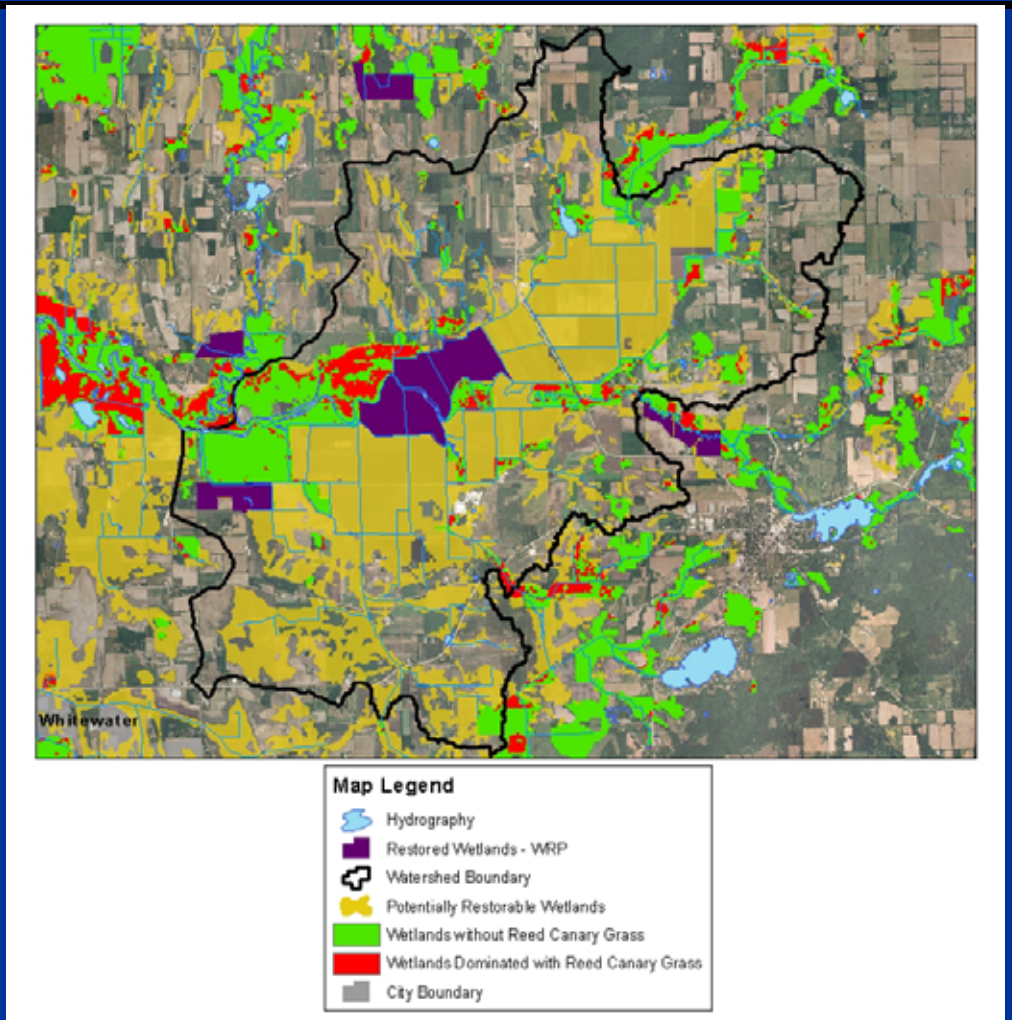
- Doesn't account for wetland lost before soil mapping, eg early cities
- Only as good as SSURGO and WWI inputs



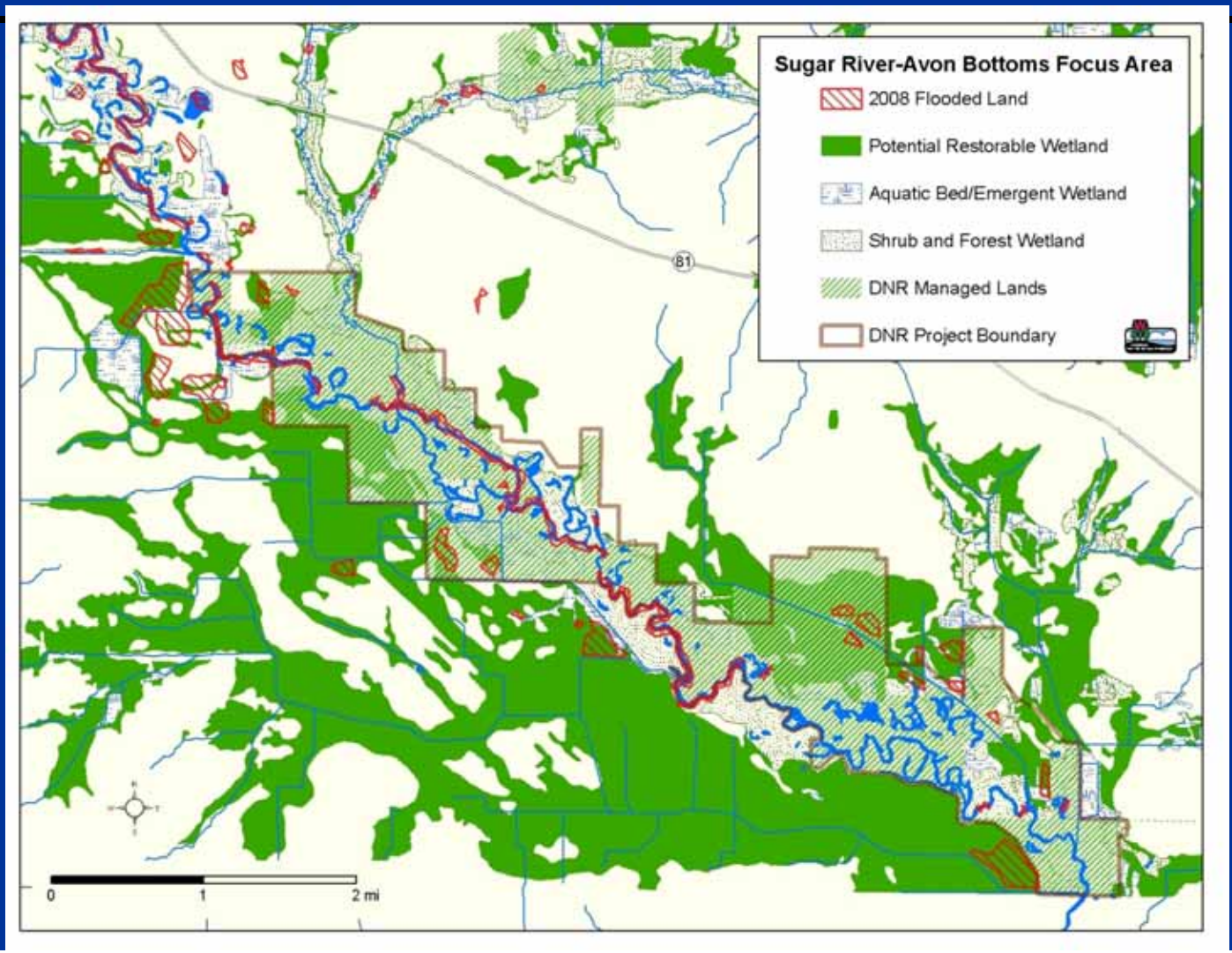

Wetland Restoration Relative Need
Relative Need
0 - 11
12 - 25
26 - 46
47 - 100
305
Lost, but not Restored Acres / Remaining Wetland Acres X Original Wetland Acres / SWAT Acres X 100
= Relative Need
Waushara
Ozaukee
Sheboygan
MARQUETTE
Montello
Princeton
GREEN LAKE
Green Lake
Ripon
Fond du Lac
FOND DU LAC
Markesan
Fox Lake
Mayville
COLUMBIA
Beaver Dam
DODGE
Juneau
Horicon
West Bend
WASHINGTON
Hartford
Columbus
Lodi
Sun Prairie
Waterloo
Watertown
Oconomowoc
Delafield
WAUKESHA
Pewaukee
Waukesha
Middleton
Madison
DANE
Monona
Lake Mills
Jefferson
JEFFERSON
Verona
Fitchburg
Stoughton
Fort Atkinson
Edgerton
Whitewater
Evansville
Milton
RACINE
Janesville
Elkhorn
Burlington
GREEN
Monroe
Brodhead
Delavan
Lake Geneva
KENOSHA
Beloit



Scuppernong Creek Subwatershed



Restoration Opportunity



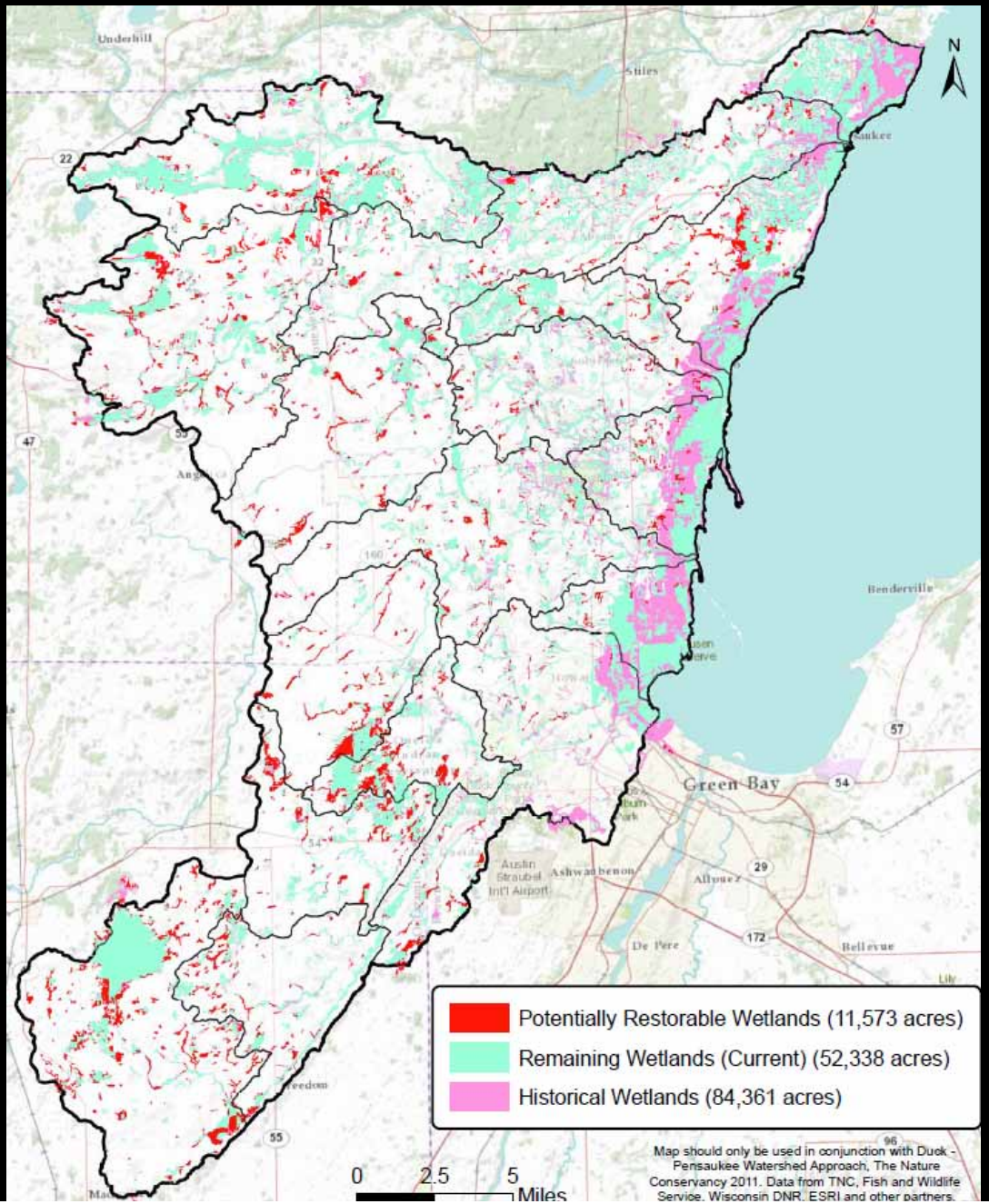
The Duck-Pensaukee
Watershed Approach

Nick Miller, Tom Bernthal, John Wagner,
Mike Grimm, Gary Casper, Joanne Kline

The Nature Conservancy
Wisconsin Department of Natural Resources
UW-Milwaukee Field Station

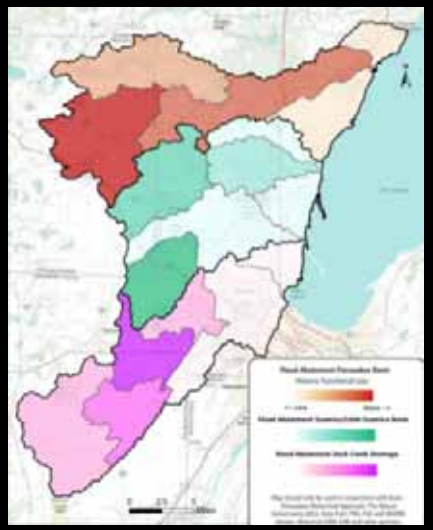
The Joyce Foundation

Site ID: *Results*

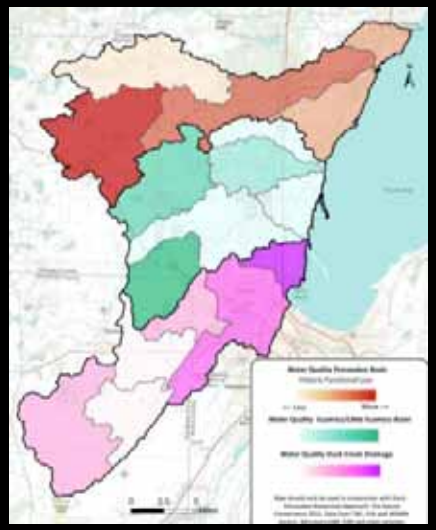


Watershed Profile: *Ecosystem Service Losses*

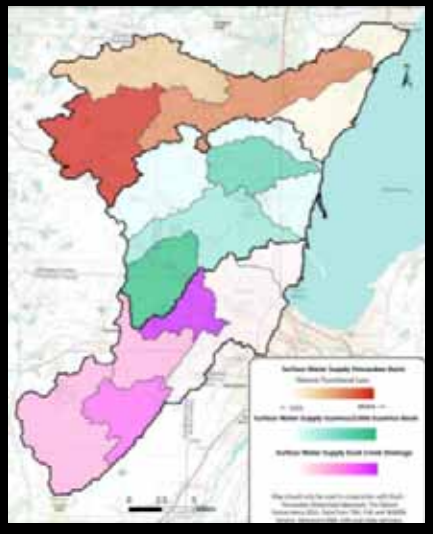
Flood Abatement



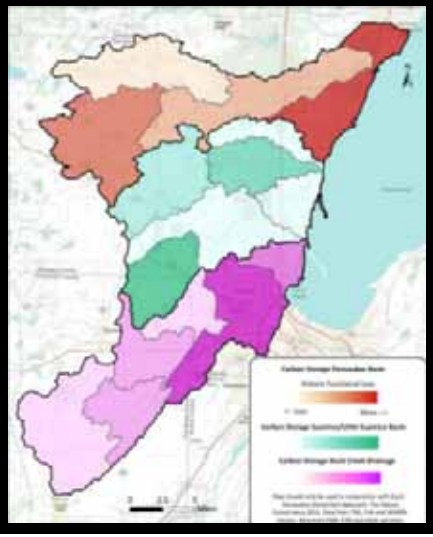
Water Quality Protection



Surface Water Supply

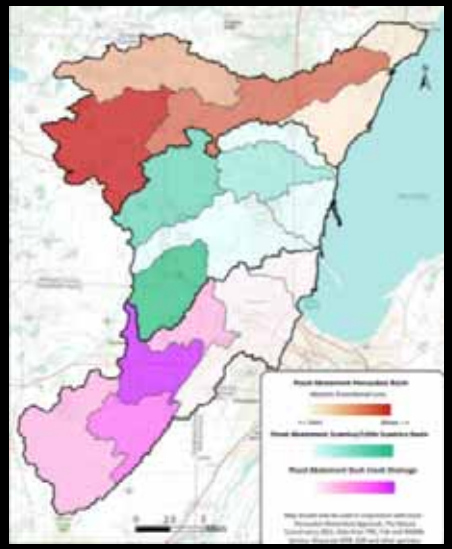


Carbon Storage

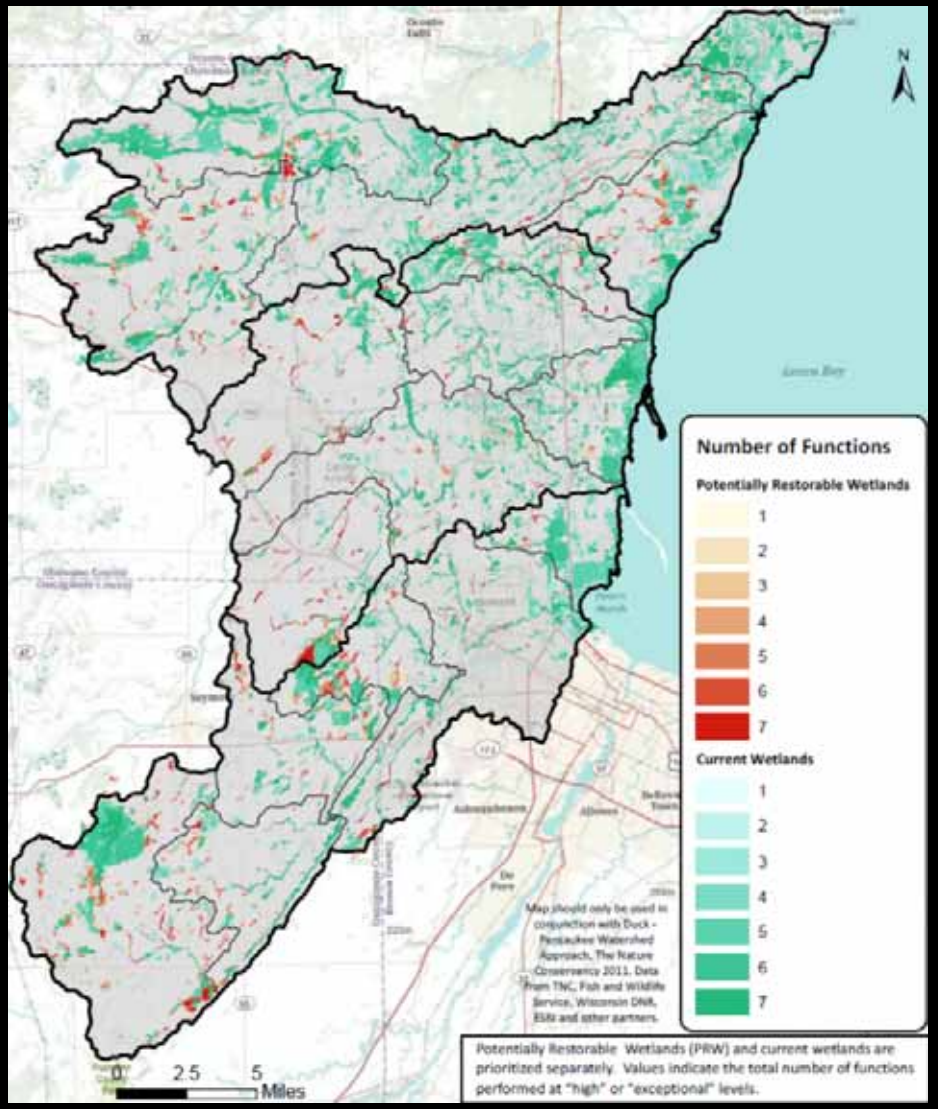


Site Selection

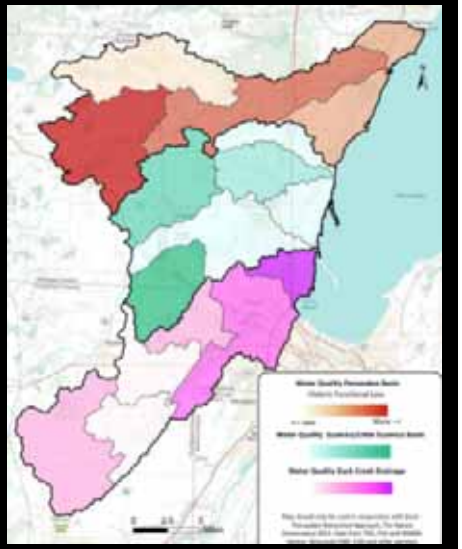
Flood Abatement



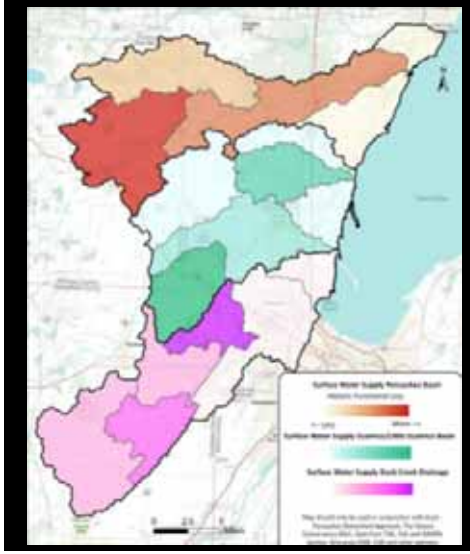
Ecosystem Services



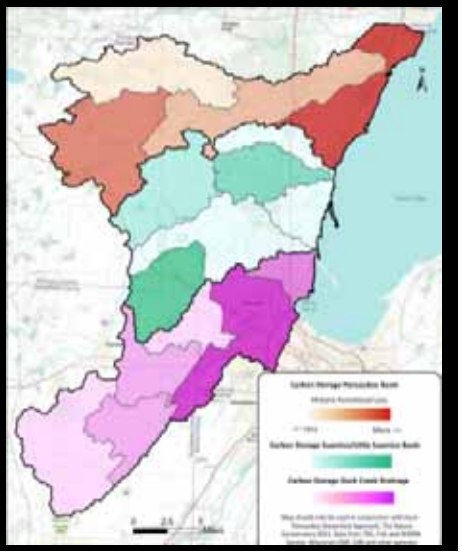
Water Quality



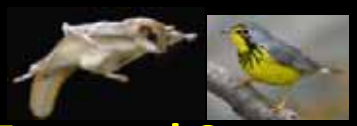
Surface Water Supply



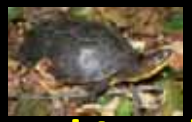
Carbon Storage



Site Prioritization: *Wildlife Habitat*

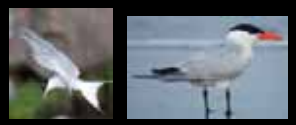


Forested Swamps



Integrated Landscapes

Open Wetlands & Waters



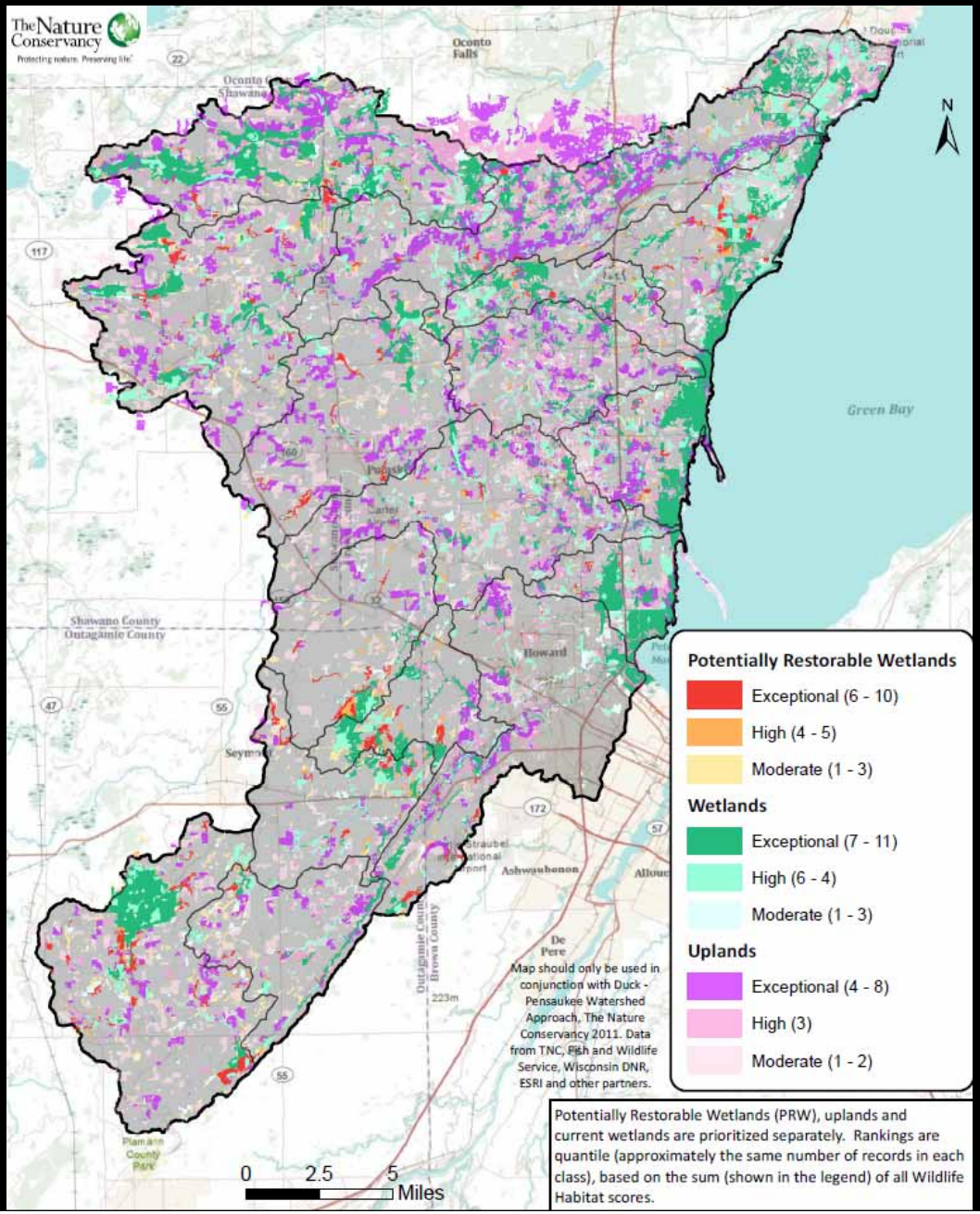
Beaches

Shrub Swamps

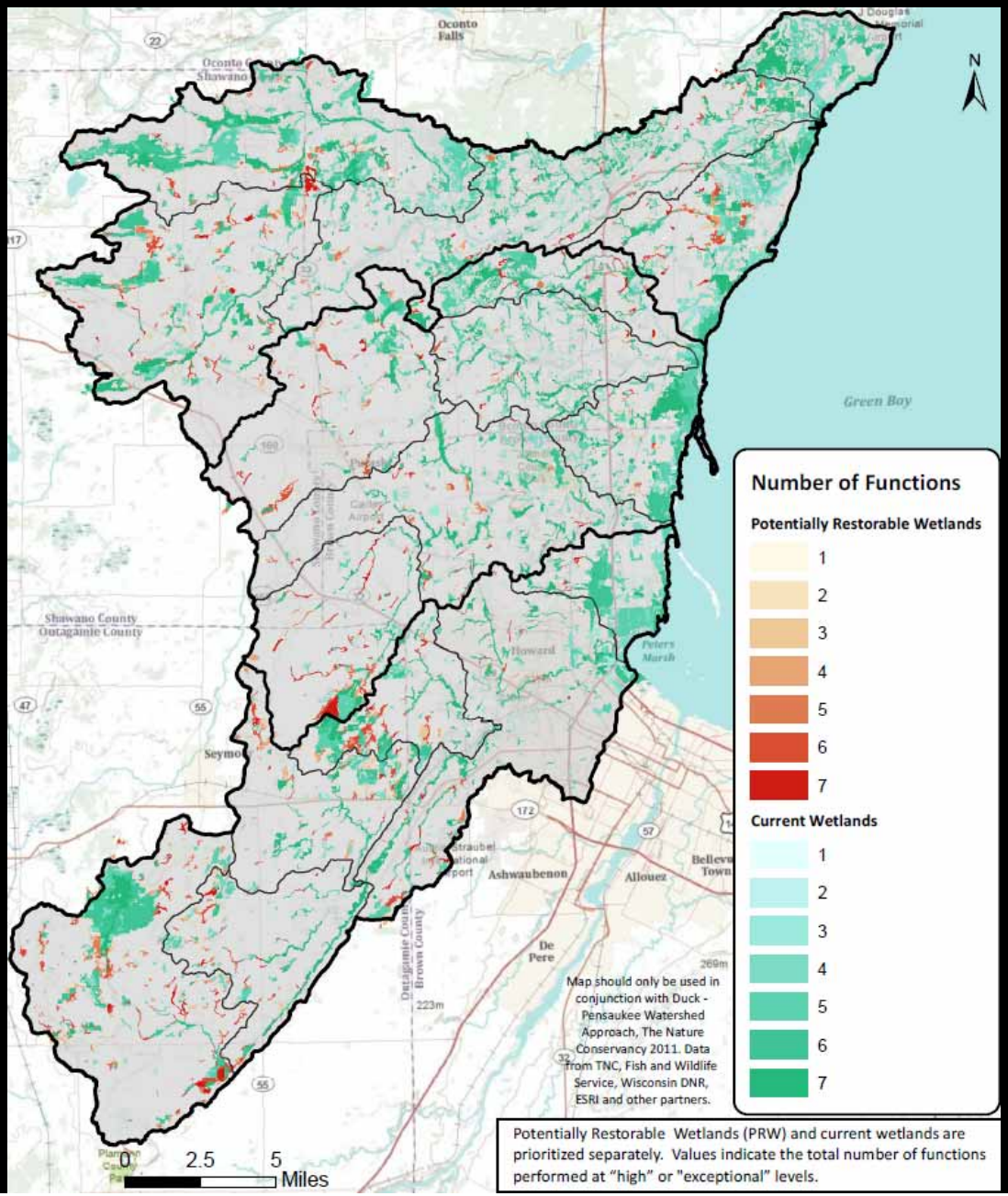
Riparian Areas

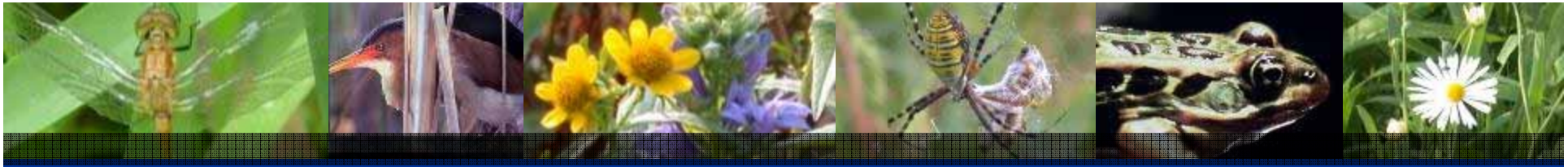
Migratory Shorebirds

Site Prioritization: *Wildlife Habitat*

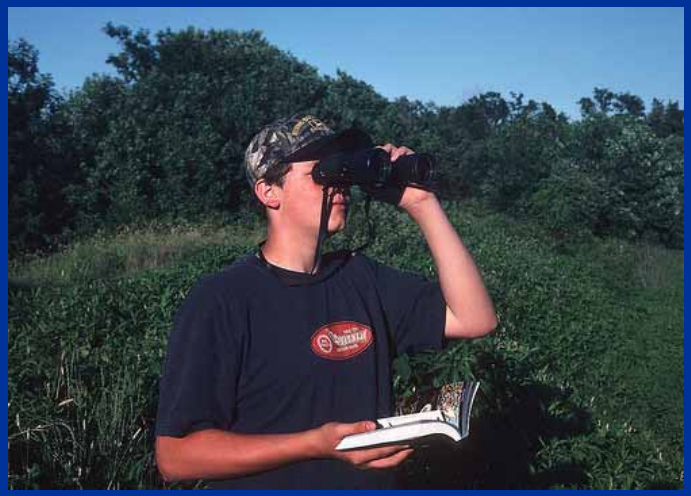


Site Prioritization: *Ecosystem Services*





Volunteer Monitoring Programs



Wisconsin Ephemeral Ponds Project
Citizen Monitoring Network









Connecting People to Wetlands

What is an 'Ephemeral Pond?'

National Geographic Magazine-April, 1999
Photo by George Grall

Ephemeral Depression

Depressional Pond

Vernal Pool

Woodland Pond

Seasonal Pool

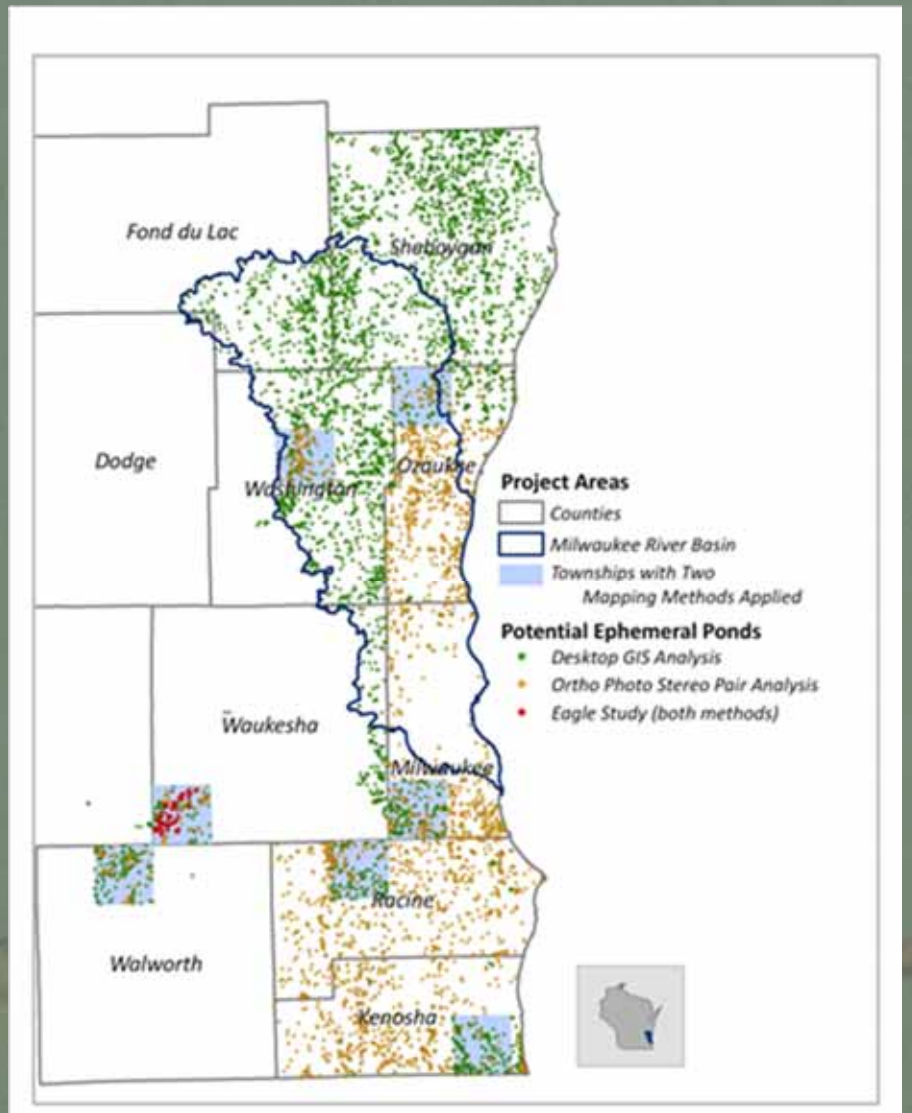
Autumnal Pool

Prairie Pothole

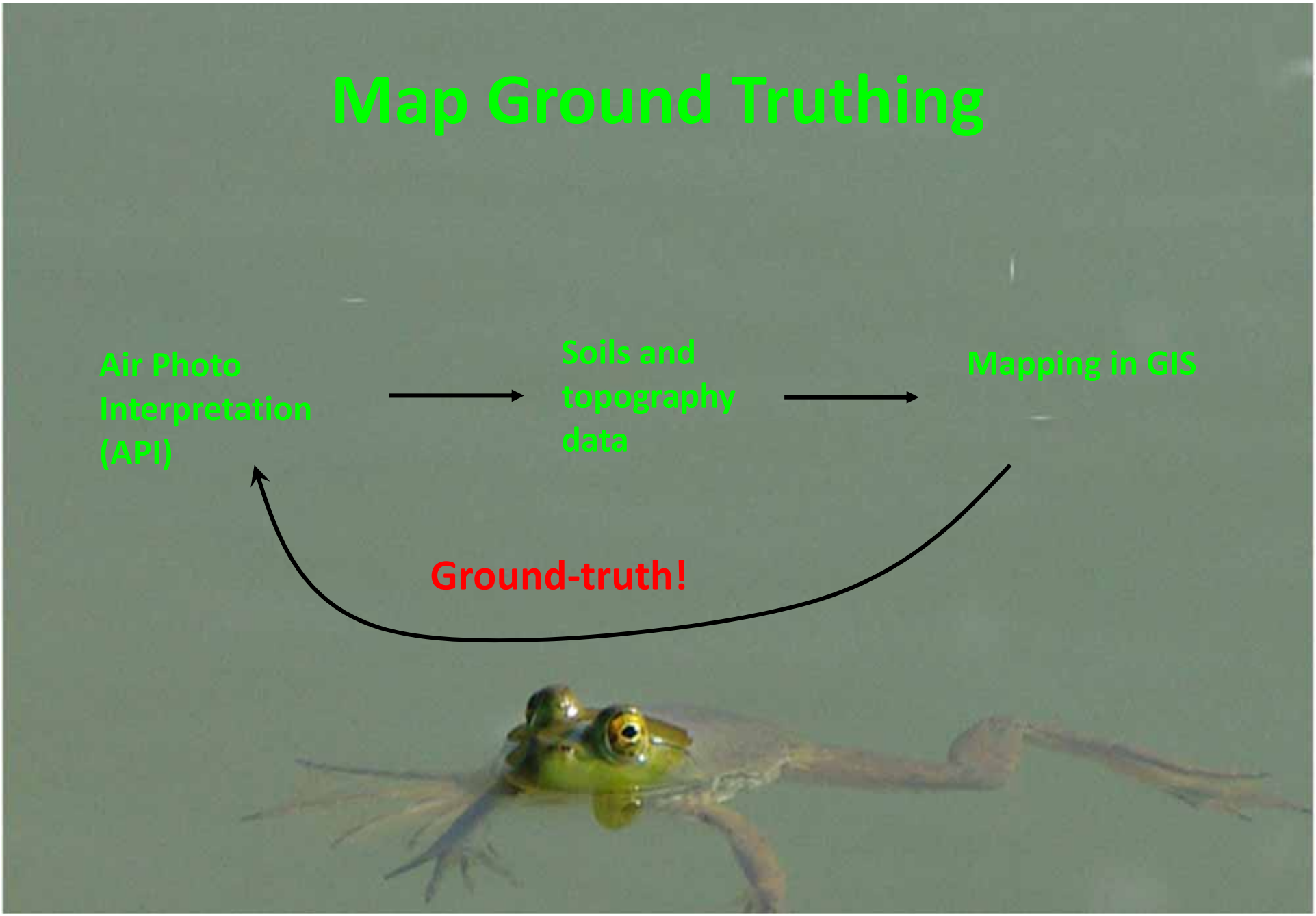
When does it occur?

Where does it occur?

Potential Ephemeral Ponds Mapping



Map Ground Truthing

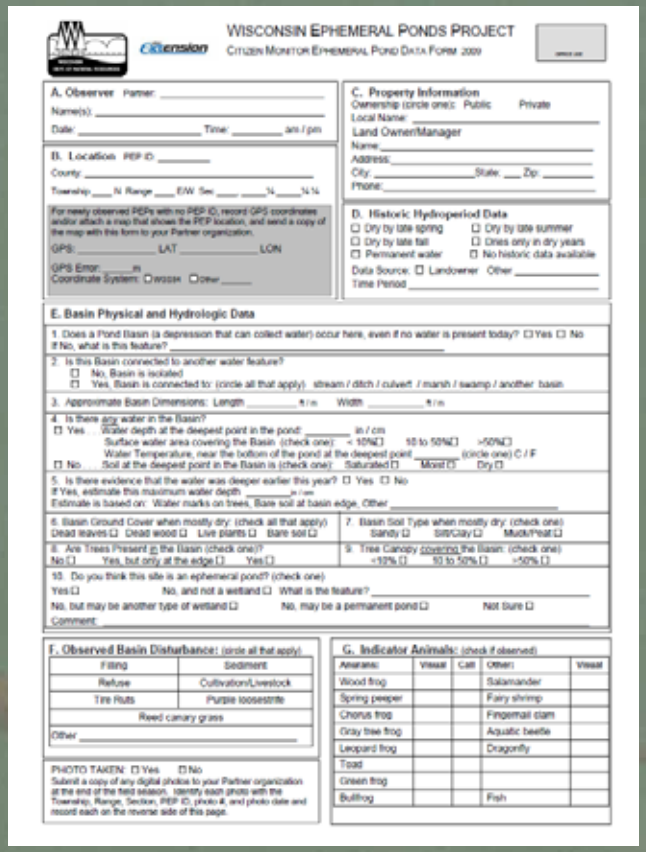


WISCONSIN EPHEMERAL PONDS PROJECT – CITIZEN MONITORING NETWORK

2008


WISCONSIN EPHEMERAL PONDS PROJECT
EPHEMERAL POND DATA FORM

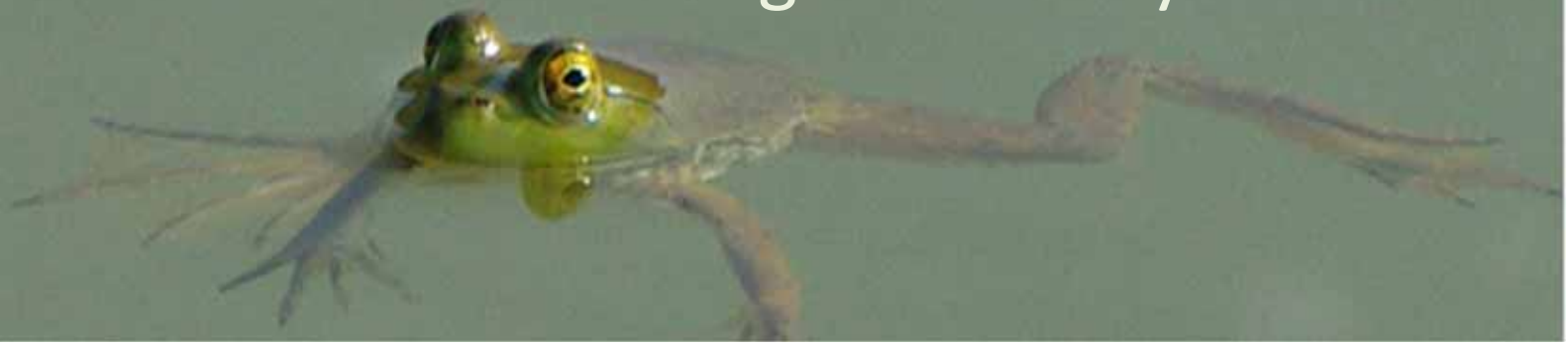
2009


WISCONSIN EPHEMERAL PONDS PROJECT
CITIZEN MONITOR EPHEMERAL POND DATA FORM 2009

NEW in 2013!

Amphibian Egg Mass Surveys

- Evaluate Importance for Amphibian Reproduction
- Biotic Inventory for WEPP Database
- Map on the Natural Heritage Inventory

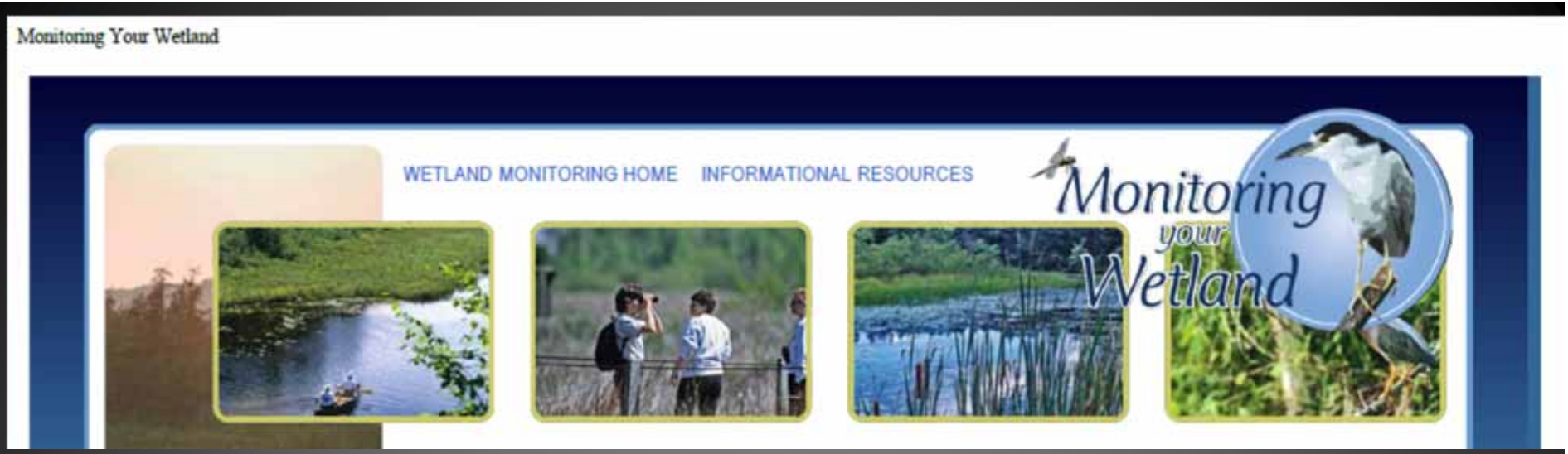


Purple Loosestrife Control Monitoring

For more information contact:

Brock.woods@wisconsin.gov

(608) 221-6349



Rock River Coalition Wetland Monitoring

for more information contact

Jeanne Scherer,
Wetland Monitoring Coordinator, The Rock River Coalition
Phone: 920-382-6123
Email: wetlands@rockrivercoalition.org


RESTORE HORICON MARSH